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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/742,386	12/22/2000	Norio Kimura	2000-1761A	8728
513	7590	12/01/2006	EXAMINER	
WENDEROTH, LIND & PONACK, L.L.P.			MOORE, KARLA A	
2033 K STREET N. W.			ART UNIT	
SUITE 800			PAPER NUMBER	
WASHINGTON, DC 20006-1021			1763	

DATE MAILED: 12/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Interview Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/742,386	KIMURA ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Karla Moore	1763	

All participants (applicant, applicant's representative, PTO personnel):

- (1) Karla Moore. (3) Yukio Fukunaga.  
 (2) Joseph Gorski. (4) Kazuyuki Suzuki (5) Yuichi Akai.

Date of Interview: 29 November 2006.

Type: a) ☐ Telephonic b) ☐ Video Conference  
 c) ☒ Personal [copy given to: 1) ☐ applicant 2) ☒ applicant's representative]

Exhibit shown or demonstration conducted: d) ☐ Yes e) ☐ No.  
 If Yes, brief description: \_\_\_\_\_.

Claim(s) discussed: 27,32 and 35.

Identification of prior art discussed: Dordi et al. and Mayer et al.

Agreement with respect to the claims f) ☐ was reached. g) ☐ was not reached. h) ☒ N/A.

Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: See Continuation Sheet.

(A fuller description, if necessary, and a copy of the amendments which the examiner agreed would render the claims allowable, if available, must be attached. Also, where no copy of the amendments that would render the claims allowable is available, a summary thereof must be attached.)

THE FORMAL WRITTEN REPLY TO THE LAST OFFICE ACTION MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW. (See MPEP Section 713.04). If a reply to the last Office action has already been filed, APPLICANT IS GIVEN A NON-EXTENDABLE PERIOD OF THE LONGER OF ONE MONTH OR THIRTY DAYS FROM THIS INTERVIEW DATE, OR THE MAILING DATE OF THIS INTERVIEW SUMMARY FORM, WHICHEVER IS LATER, TO FILE A STATEMENT OF THE SUBSTANCE OF THE INTERVIEW. See Summary of Record of Interview requirements on reverse side or on attached sheet.

Examiner Note: You must sign this form unless it is an Attachment to a signed Office action.

K Moore  
 Examiner's signature, if required

## Summary of Record of Interview Requirements

### Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record

A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

### Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews

#### Paragraph (b)

In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

#### 37 CFR §1.2 Business to be transacted in writing.

All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiner's Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:

- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

A complete and proper recordation of the substance of any interview should include at least the following applicable items:

- 1) A brief description of the nature of any exhibit shown or any demonstration conducted,
- 2) an identification of the claims discussed,
- 3) an identification of the specific prior art discussed,
- 4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
- 5) a brief identification of the general thrust of the principal arguments presented to the examiner,  
(The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
- 6) a general indication of any other pertinent matters discussed, and
- 7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

### Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiner's version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, "Interview Record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.

Continuation of Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments:

Applicant's representatives presented proposed amendments, which are attached, that are believed to further clarify the claimed invention and overcome the prior art of record. With respect to claim 1(27), the addition of structure(s) reciting a central source of acid and a peripheral source of oxidizing agent was proposed. With respect to claim 2(32), the addition of structure reciting a peripheral sealing member around the plating fluid was proposed, as was use of the term "batch". With respect to claim 3(35), structure(s) reciting the presence of separate nozzles for supplying a plating fluid and pure water was proposed. Examiner agreed that as proposed and presented by the Applicant, such amended claim language would appear to overcome the prior art of record.

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**FAX TRANSMISSION COVER SHEET**

To: Examiner Moore

Fax Number: (571) 273-1440

From: Joseph M. Gorski

Date: November 28, 2006

Re: U.S. Application Serial No. 09/742,386

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TOTAL NUMBER OF PAGES TRANSMITTED, INCLUDING COVER SHEET 5

Message: Provided herewith are the issues and claims that I would like to discuss during our interview scheduled for 11:00 on November 29, 2006.

Thanks

  
Joseph Gorski

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Fax Operator: J. Gorski

**ISSUES FOR INTERVIEW**

The instant invention differs from Dordi et al. and Mayer et al. in that, with the instant invention an oxidizing agent solution is applied to a peripheral edge portion of the substrate and an acid solution is supplied to a central portion of the substrate so as to etch the substrate. To the contrary, in Mayer et al. an etching solution is supplied to both the peripheral edge of the substrate and the central portion of the substrate. Neither of these references discloses or suggests supplying an oxidizing agent solution to the peripheral edge of the substrate while supplying an acid solution to the central portion of the substrate. Proposed claim 1 (generally corresponding to claim 27) provided herewith is believed to bring out these inventive features.

The instant invention differs from Dordi et al. in that the plated metal film is formed in a "batch-type" operation as opposed to a continuous operation as taught by Dordi et al. Proposed claim 2 (generally corresponding to claim 32) provided herewith is believed to bring out this inventive feature.

The instant invention differs from the relied-upon references in the manner by which the substrate and cathode electrode are cleaned after formation of a plated film. Proposed claim 3 (generally corresponding to claim 35) provided herewith is believed to bring out this inventive feature.

1. (claim 27) A semiconductor substrate processing apparatus, comprising:
  - a carry-in and carry-out section for carrying in and carrying out a semiconductor substrate having a surface on which a circuit is formed, in a dry state;
  - a plated metal film forming unit for forming a plated metal film on said semiconductor substrate which has been carried in;
  - a bevel etching unit including
    - (i) a central fluid discharge member and a source of acid solution in fluid communication with said central fluid discharge member, and
    - (ii) a peripheral fluid discharge member and a source of oxidizing agent solution in fluid communication with said peripheral fluid discharge member,wherein said central fluid discharge member and said peripheral fluid discharge member are constructed and arranged to, during rotation of said semiconductor substrate, supply the acid solution from said source of acid solution to a central portion of said semiconductor substrate and supply the oxidizing agent solution from said source of oxidizing agent solution to a peripheral edge portion of said semiconductor substrate, respectively, for thereby etching and removing at least one of said plated metal film, a seed layer and a barrier layer formed at the peripheral edge portion of said semiconductor substrate, and said bevel etching unit is also operable to rotate said semiconductor substrate so as to spin-dry said semiconductor substrate after having been etched;
  - an annealing unit for annealing said semiconductor substrate; and
  - a transport mechanism for transporting said semiconductor substrate between said units, said transport mechanism having a dry hand for handling said semiconductor substrate in a dry state and a wet hand for handling said semiconductor substrate in a wet state.

2. (claim 32) A semiconductor substrate processing apparatus, comprising:

a carry-in and carry-out section for carrying in and carrying out a semiconductor substrate having a surface on which a circuit is formed, in a dry state;

a batch-type plated metal film forming unit for forming a plated metal film on said semiconductor substrate which has been carried in, said batch-type plated film forming unit including

- (i) a substrate holding portion for holding said semiconductor substrate,
- (ii) an anode disposed above a surface, to be plated, of said substrate when said substrate is held by said substrate holding portion,
- (iii) a cathode electrode in contact with said substrate when said substrate is held by said substrate holding portion, and
- (iv) a member to be impregnated with plating liquid, said member comprising a water retaining material and being positioned between said anode and said surface to be plated when said substrate is held by said substrate holding portion,

wherein said substrate holding portion, said anode, said cathode electrode and said member are constructed and arranged to form a plated film on said semiconductor substrate, when held by said substrate holding portion, by impregnating said member with said plating liquid and passing an electrical current through said cathode electrode;

a bevel etching unit operable to supply an acid solution to a center portion of said semiconductor substrate being rotated and to supply an oxidizing agent solution to a peripheral edge portion of said semiconductor substrate for etching and removing at least one of said plated metal film, a seed layer and a barrier layer formed at the peripheral edge portion of said semiconductor substrate, and operable to rotate said semiconductor substrate so as to spin-dry said semiconductor substrate which has been etched;

an annealing unit for annealing said semiconductor substrate; and

a transport mechanism for transporting said semiconductor substrate between said units, said transport mechanism having a dry hand for handling said semiconductor substrate in a dry state and a wet hand for handling said semiconductor substrate in a wet state.



3. (claim 35) A semiconductor substrate processing apparatus, comprising:

a carry-in and carry-out section for carrying in and carrying out a semiconductor substrate having a surface on which a circuit is formed, in a dry state;

a plated metal film forming unit for forming a plated metal film on said semiconductor substrate which has been carried in, said plated film forming unit including

- (i) a substrate holding portion for holding said semiconductor substrate,
- (ii) an anode disposed above a surface, to be plated, of said substrate when said substrate is held by said substrate holding portion,
- (iii) a cathode electrode for passing an electric current in contact with said substrate when said substrate is held by said substrate holding portion,
- (iv) a seal member positioned inwardly of said cathode electrode and in contact with said substrate when said substrate is held by said substrate holding portion, and
- (v) a pure water supply nozzle for supplying pure water after formation of the plated film

wherein said substrate holding portion is movable, from a first position to a second position, away from said seal member and said cathode electrode such that pure water supplied when said substrate holding portion is in the first position overflows said seal member, and pure water supplied when said substrate holding portion is in the second position underflows said seal member and contacts said cathode electrode for cleaning said cathode electrode;

a bevel etching unit operable to supply an acid solution to a center portion of said semiconductor substrate being rotated and to supply an oxidizing agent solution to a peripheral edge portion of said semiconductor substrate for etching and removing at least one of said plated metal film, a seed layer and a barrier layer formed at the peripheral edge portion of said semiconductor substrate, and operable to rotate said semiconductor substrate so as to spin-dry said semiconductor substrate which has been etched;

an annealing unit for annealing said semiconductor substrate; and

a transport mechanism for transporting said semiconductor substrate between said units, said transport mechanism having a dry hand for handling said semiconductor substrate in a dry state and a wet hand for handling said semiconductor substrate in a wet state.